

REMARKS/ARGUMENTS

Claims 1, 3-5, 7 and 9-11 were pending at the time of the Office Action.

Claims 1, 7 and 10 are amended to correct minor informalities.

Claims 5 and 11 are newly canceled. This renders the objection to informalities in claim 5 as moot. In addition, the cancellation of claims 5 and 11 renders the rejection as obvious over Shinotsuka et al. (US 2002/0041404) and Bamberger et al. (US 5,946,407) in view of Chen et al. (U.S. 6,141,450) moot.

The rejection of claims 1, 3, 4, 7, 9 and 10 as obvious over Shinotsuka et al. in view of Bamberger et al. is respectfully traversed. The cited references fail to teach or suggest all elements of the current claims.

The device having a lookup table (LUT) according to the present invention can divide an input luminance image into a plurality of equal areas for continuously emphasizing luminance variations in an input image and converting each of the luminance areas from 0 to a specified value. An image having varying luminance enhanced like a contour line therein can be displayed on a monitor screen of the image sensor, enabling a user to easily recognize by vision luminance of each of areas of the input image.

Specifically, the process of measuring luminance of each of areas of an input image comprises estimation of gray level of each area having enhanced luminance like a contour line in the image processed by an image sensor on the basis of settings in the conversion table. Then, the luminance of each of the areas of the input image is determined by comparison of the luminance with the gray level estimated from the processed image by using the predetermined performance characteristics of the image sensor. By virtue of the above mentioned technical features, the device according to the present invention can achieve a quick and easy estimation of the luminance condition of the image.

In contrast, neither Shinotsuka et al. nor Bamberger et al. teach such a device. The Office Action agrees that Shinotsuka et al. does not disclose such an image processing device. Similarly, Bamberger et al. fails to teach an image processing device as currently claimed.

The invention in Bamberger et al. is intended to determine the difference of gray levels between each pixel and its neighboring pixel, and increase or decrease the measured difference when the difference is larger or smaller than a specified value. Bamberger et al. performs the filtering of each pixel and the calculation of an average of a weighted sum of pixels surrounding each pixel. Namely, Bamberger et al. states that the filtering process constitutes a convolution on the digital images with convolution mask 440 having 9 cells. The convolution mask measures the average value of eight pixels 442 surrounding each pixel 444 in the digital image. However, Bamberger et al. merely performs the "spot Enhancement" of, for example, an edge by doing the above-described operations.

In particular, Bamberger et al.'s method is different from the method of the present invention in which an image is equally divided into a plurality of luminance areas, and luminance variations in the areas of the image are continuously converted into areas having similarly enhanced brightness.

Figures 3E to 3G of Bamberger et al. are illustrative of examples of certain area enhanced by the gray scale stretching process.

Figures 4B to 4D are illustrative of examples of images with contrast enhanced by different logarithmic histogram.

Figures 5A to 5C are examples of images zoomed by magnification.

Therefore, the system of Bamberger et al is distinctly different from the system of the present claims that can display on a display screen an image having luminance variations emphasized like a contour line, enabling a viewer to easily recognize by vision the brightness of respective areas of the image.

Because the references fail to teach all claim limitations, claims 1, 3, 4, 7, 9 and 10 are not obvious.

In view of the foregoing amendments and remarks, Applicants submit that the present application is in condition for allowance. A Notice of Allowance is therefore respectfully requested.

No fees are believed due. However, the Commissioner is hereby authorized during prosecution of this application and any related appeal, to charge any fees that may be required (except for patent issue fees required under 37 CFR §1.18) or to credit any overpayment of fees to Deposit Account No. 50-0337. Please ensure that Attorney Docket No. 7272-113/10302986 is referred to when charging any payments or credits for this case. If an extension of time is required in connection with this paper, please consider this a Petition therefor and charge any fees required to Deposit Account No. 50-0337.

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Respectfully submitted,



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